

False Positives and Education

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This article is to register the author's subjective realizations on how the false positives bring down the quality of education and research. The difficulties felt by teachers as well as students are not due to the vastness of knowledge which is to be shared through education, but due to the false positives which directly contradicts with axiomatic and normative foundations of scientific investigations. The author believes that the quality of educational operations can be improved only by eliminating the mistakes, not by restructuring the system. No one except the teachers can be held responsible for the fall in the quality of teaching.

1. Does everything change?

You could hear from a lot of people that everything changes and everything can be changed. This has almost become a figure of speech in every academic meeting. Is it true that everything changes? No. A is A ($A=A$). This cannot be changed to A is NOT A ($A \neq A$). The entire logical structure of science would collapse, if you change this basic axiom. This is not the only case, but there are several cases like this. The first principles of science remain the same. The speed of light is a constant. We have several constants in science. It is true that many teachers tell students that everything can be changed. Won't the students be misguided by such statements which directly attack the very foundations of science? How can the quality of education and research be improved with the false positives? One should seriously study the complaint made against the author by a group of students. The complaint goes like this: '*The teacher is discouraging us. He is saying that this cannot be done and that cannot be done*'. Is it a fault of the teacher? Is it a fault of students? Every limiting law states what cannot be done under a set of assumed conditions. The academic policy makers must realize that every law of science has 'double negatives.' Does science discourage the progress of students? There is a difference between an educated man and a common man. A common man would say that everything can be changed or everything can be done. An educated man would say that what cannot be done! There lies the difference.

2. Study as you wish (randomly)

No study is random process. Every scientific method of study is a *structured process* whose logical structure is based on the knowledge of the common properties observed of different familiar things. What study is not structured? According to students and many teachers, you can study things randomly. Open any page of the book and read it. If it comes in the examination and if you have the luck, you will get good marks. Shouldn't one study word by word from the first page to last page of a monograph to grasp the idea conveyed through it?

3. One should have a lot of knowledge to study 'that' subject

One should have lot of knowledge to study 'this' subject. This is another statement which one would hear from both teachers and some 'brilliant' students. The truth is that different things can be studied with the same knowledge. Can't different things be studied with the same knowledge? Being a teacher of biophysical chemistry, the normative subject which deals with the fundamental ontological structure of physics, chemistry, biology and mathematics, I heard from many students:

1. *Sir, I have done my UG in chemistry, I know nothing about biology.*
2. *Sir, I have my UG in botany, I know nothing about computers.*
3. *Sir, I have studied electronics in my UG course, I have no idea of biophysics. You have to personally take care of me.*

There is no doubt that one who teaches the normative and axiomatic sciences would have heard such statements from many students. What is the root cause of the problem? The students know the object. But, many students do not know the difference between an object and its properties. What is the difference between a thing and its properties? No student answers. **What knowledge is applicable to more than one thing?** No student answers. What knowledge is applied to study a thing? No student knows. ***The failure to find the difference between a thing and its properties is the root cause of all academic problems,*** apart from the administrative and evaluative issues. The author considers this is the root cause of all academic problems because ***nothing can be studied without the knowledge of its properties.***

If there is no property that is true about x, then $\sim(x \text{ exists})$.

There is at least one property which is true of x, means, x exists.

$(x \text{ exists}) \leftrightarrow EF(Fx)$.

$\sim(x \text{ exist}) \leftrightarrow \sim EF(Fx)$.

We cannot know about that which has no property.

What knowledge is applicable to more than one thing?

Any property which can be found in more than one thing is a common property. Any property which cannot be found in more than one thing is a special property.

The knowledge of the common properties is applicable to more than one thing because a common property can be found in more than one thing. The knowledge of a special property is not applicable to more than one thing because a special property cannot be found in more than one thing.

No knowledge is applicable to more than one thing if things have no common property. Is no knowledge applicable to more than one thing? No knowledge can be applied by more than one person in the absence of common properties among things. Is no knowledge used by more than one person?

Nothing can be studied without the knowledge of its properties. Students should learn how to use the knowledge which is applicable to more than one thing in their studies. Teachers should illustrate to students how the knowledge of the common properties is applicable to more than one thing and **the students should be provided with the explicit list of common properties of known things.** Why should not students learn to use the knowledge which is applicable to more than one thing?

Everyone who proclaims that things have no common properties would not explain:
i. how a knowledge is applicable to more than one thing, and ii. how a knowledge can be used by more than one person.

How can a knowledge be applicable to more than one thing if things have no common property? How can different things be studied with the same knowledge if things have no common property? We can do medical testing for humans on fruit flies or yeast as starting points and still get results. How can this be possible if things have no common property? We cannot distinguish each other as human if no property is common to us. Research is the search to find whether the property identified through a one is common to all or not.

Aren't the following properties found in more than one thing?

1. Divisibility: x/y
2. Comparability: Is $x > y$?
3. Connectivity: Is $y = f(x)$?
4. Disturbability: Is x constant?
5. Reorderability: $[x = cy] \leftrightarrow [c = x/y] \leftrightarrow [y = x/c]$
6. Substitutability:
 $y = a+b \quad \dots (1)$
 $x = cy \quad \dots (2)$
 By substituting (1) in (2),
 $x = c(a+b)$
7. Satisfiability:
 Can $(y = 2)$ satisfy $(5y = 10)$?
 Yes. $(y = 2)$ can satisfy $(5y = 10)$.

Can $(y = 3)$ satisfy $(5y = 10)$?
 No. $(y = 3)$ cannot satisfy $(5y = 10)$.

The properties which are listed above are found in more than one thing. The knowledge of these properties is applicable to more than one thing. These are the properties which are routinely studied through each thing by different people in different ways.

Is 'x'	x	Me	You	Cow	Idea	Atom
divisible?		✓	✓	✓	✓	✓
comparable?		✓	✓	✓	✓	✓
connectable?		✓	✓	✓	✓	✓
disturbable?		✓	✓	✓	✓	✓
reorderable?		✓	✓	✓	✓	✓
substitutable?		✓	✓	✓	✓	✓
satisfiable?		✓	✓	✓	✓	✓

Do student need special intelligence to study the common properties of things?

Students do not need special intelligence to study the common properties of things. Is the intellect of the students inferior to the intellect of the teachers who routinely study divisibility, comparability, connectivity, disturbability, reorderability, substitutability, and satisfiability of things?

Aren't your activities limited by the properties of things?

- People/things cannot be divided if they do not have divisibility.
- People/things cannot be compared if they do not have comparability.
- People/things cannot be connected if they do not have connectivity.
- People/things cannot be disturbed if they do not have disturbability.
- People/things cannot be reordered if they do not have reorderability.
- People/things cannot be substituted if they do not have substitutability.
- People/things cannot be satisfied if they do not have satisfiability.

The Double Degree Dilemma

This is a rule in the institution where the author had education. If one joins a Masters Degree course after the completion of Doctoral Degree, then the doctoral degree has to be withdrawn. The rationale is that the hierarchy in degrees awarded should reflect the degree (extent) to which the subject (the recipient of the degree) could articulate objects, irrespective of the differences among the objects. What is the current scenario? One goes for a bachelor degree after the completion of Master degree. People say that I did M. Sc., in chemistry after M. Sc., in Physics. What does it mean in actual philosophical and scientific terms? A master is neither a master nor a bachelor. Doing is bachelor degree after master degree: is it a fame or shame? Why are these kinds of activities promoted? Any academic institution (in the true sense) should prohibit these kinds of activities in order to keep the reputation of the degree awarded by it.

Conclusion

The quality of thinking and education can be improved only by removing the false positives which directly contradicts with the normative and axiomatic principles, not just by randomly restructuring the system of education. Be positive. Be not false positive!

References:

1. Analytical Wiki by the same author
<http://analytical.wikia.com>
2. Analytical Thinker's Manual by the same author.
http://www.archive.org/download/AnalyticalThinkersManual/Analytical_Thinkers_Manual.pdf

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